SSCOR S-SCORT Ten

Models 2100 & 2100S

Clearing The Airway Is Our #1 Priority

Operating Instructions & Maintenance Manual

SSCOR, INC.
11064 Randall Street
Sun Valley, CA 91352 USA

www.sscor.com
shop.sscor.com
Email: marketing@sscor.com
techsupport@sscor.com

Tel 1+818-504-4054
Tel 1+800-434-5211

Caution-Notice

Revision AA (02/17)

1. SSCOR suction units are not designed or intended for use in extended procedures that require prolonged high vacuum/low airflow applications, as is the case in wound drainage or endoscopic use or in any other procedure that produces high vacuum levels within an occluded system for an extended period of time. Turn the suction unit off when it is not in use.

2. Federal law restricts this device to sale, distribution, and use by, or on the order of a physician, emergency medical technician, or other medical practitioner. For use by medical personnel trained in suctioning techniques and in the use of medical suction equipment.

3. This manual is restricted to the discussion of the use and maintenance of this device. It does not attempt to discuss professional techniques in suctioning procedures.

4. Operator should be thoroughly familiar with these operating instructions before this device is used.

5. Do not use in the presence of flammable agents or anesthetics.

6. The S-SCORT Ten produces a powerful vacuum. Do not use the S-SCORT Ten to suction neonates.

7. The suction pump must be reconnected to the charging source after each use and remain on charge until needed. Disconnect only for portable use. Check condition of the battery frequently, see the weekly checklist, page 9. SSCOR's AC-DC converter only activates the internal battery charger. It will not run the pump, however, the suction unit will run on vehicle power when the unit is connected directly to the vehicle battery via the enclosed DC power cord or the SSCOR charging/retention shelf.

8. The mechanical shut-off in the canister is designed to close when the canister is filled with fluids. If the vacuum shuts down, replace the canister. Spare canisters are available from SSCOR, Inc. or your dealer. Be sure the lid on the canister is securely tightened to prevent a loss of vacuum at a critical time.

9. Before testing for vacuum over -300mmHg look for an expiration date on the canister (where applicable) and change the canister if the canister has passed the expiration date to minimize the possibility of implosion, which can occur when a canister is aged or damaged.

10. The battery is protected from a deep discharge condition by shutting down after approximately 45 minutes (±10%) running time.

Refer all servicing of electrical systems to qualified service personnel

NOTE: DO NOT ATTEMPT TO CHANGE THE ELECTRICAL SYSTEM.
THIS UNIT OPERATES ON 12-14V DC ONLY

Table of Contents

Caution-Notice	Page 2
General Description & Description of Symbols	Pages 3—4
Important Features	Pages 5—6
Getting Acquainted	Pages 7—9
Charging / Retention Shelf Mounting Instructions	Page 9
Warranty	Page 10
Maintenance	Pages 10—11
Trouble Shooting	Page 12
General Specifications	Page 13
Replacing the Battery	Page 14
Electrical Diagram	Page 15
Retention Bracket Mounting Template	Page 16

General Description

The S-SCORT® Ten is a portable, 12V DC battery operated, suction device. S-SCORT suction units are designed for hospital crash cart suction, patient transport and emergency medical service. The unit receives power from its internal 12V DC battery or from the 12V system of the vehicle. The battery is recharged by an internal, dual mode battery charger which is activated by the AC-DC converter or direct connection to the vehicle electrical system. The charger monitors the battery, charges the battery only when necessary, shuts down the unit if battery is low and signals battery condition. A full capacity, fully charged battery will power the unit for 45 minutes (±10%). Replacement battery may be purchased at shop.sscor.com

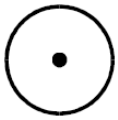
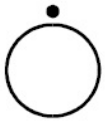
The S-SCORT Ten has two variations. The Model 2100 and Model 2100S. The Model 2100S includes a charging and retention shelf (SSCOR part #85000). The suction unit is designed to be charged through the shelf. The charging studs on the charging / retention shelf deliver the current provided by the vehicle to the PC Board inside the suction unit.

The Model 2100 is designed to be charged by the vehicle or by a converter through the receptacle on the control panel. The Model 2100 has stainless steel charging contacts which have been dipped in a nonconductive material. The coating can be peeled away to expose the stainless steel contacts when/if the Model 85000 Charging and Retention shelf is added to the system. If your suction unit is wired to the vehicle battery via an automatic load switch power supply, be sure to use a filter in order to eliminate any voltage spikes.

The S-SCORT Ten is equipped with a disposable collection canister which features a bacterial filter to screen airborne particulates and a mechanical shut-off valve to prevent fluid overflow.

The molded cover/chassis of the S-SCORT Ten is extremely rugged and, while not submersible, it is water repellent.

Description of Symbols

SYMBOL	LOCATION	MEANING
	Control Panel	Type B Equipment
	Control Panel	Pump is On
	Control Panel	Pump is Off

Battery and Charging System

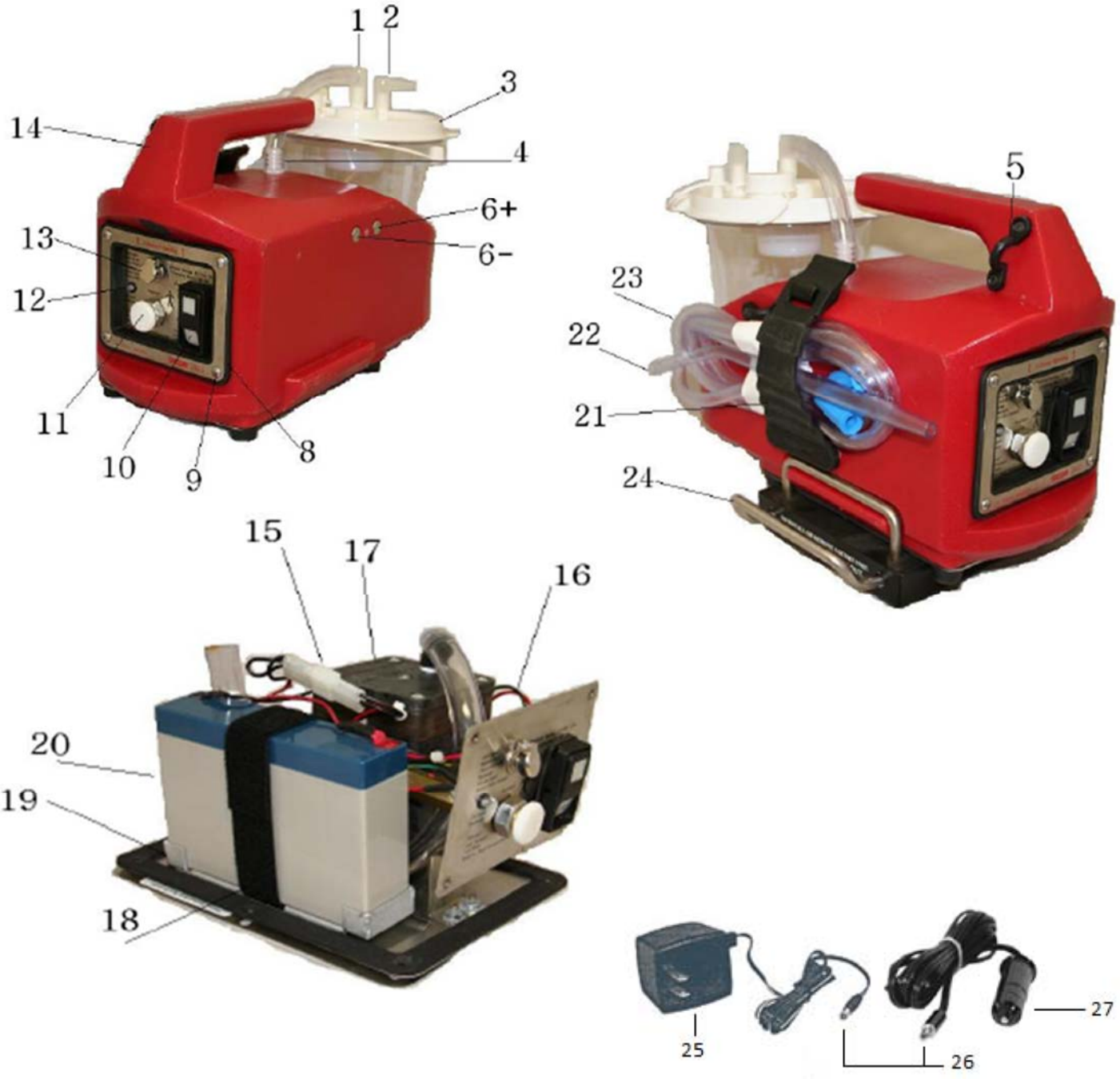
The S-SCORT® Ten suction unit is powered by sealed lead acid batteries. A sealed lead acid battery is a very stable and reliable battery. Many factors can affect the life of a battery:

- Leaving a unit switched on after there is no longer enough power to run the pump can cause a battery to deep discharge. This can reduce the life of, or destroy the battery.
- Failing to charge a battery for an extended period of time will also cause the battery to go into deep discharge.
- Low temperatures may reduce the available capacity.
- High temperatures may cause deformation of the battery case and damage the battery.

Sealed lead acid batteries can easily be maintained to permit proper operation of the equipment. To protect the battery, after each procedure turn the unit off, put the unit on charge and always store the pump at room temperature. The only way to assure the battery has functional capacity, even if it is indicated the battery is fully charged, is to perform the battery check suggested on page 6 of this operations manual.

Batteries on the S-SCORT Ten are charged by an internal dual mode charger which monitors the battery, maintains a fully charged battery while the suction unit is connected to the charging source, prevents the battery from overcharging and communicates battery condition to the user through a bi-color LED. The GREEN LED indicates the battery has been charged to its available capacity. The sealed lead acid battery is a rechargeable battery that is a corrosive device that gradually loses available capacity as natural aging Occurs. **In no way does this green light guarantee full battery capacity or 45 minutes running time. The only way to assure the battery has functional capacity is to perform the weekly check suggested on page 9 of this operations manual.** It is possible for the green LED to light and the suction unit to run for a very short period of time when the battery has lost capacity due to aging or abuse. The RED LED indicates a depleted battery - recharge immediately. The internal dual mode charger can be activated by direct connection to the DC electrical system of the vehicle or by an AC-DC converter

Important Features



Important Features

Key #	Component	Function
1	Vacuum Port	Connects canister to vacuum line
2	Patient Port	Connects canister to patient tube
3	Disposable Canister	1200cc/ml. SSCOR Part #48041
4	Bulk Head Fitting	Vacuum line connection
5	Deck Straps	Holds shoulder strap
6 (+,-)	Charging Contacts (Model 2100)	Coated, Non-conductive
6 +	Charging Contacts (Model 2100S)	Supplies DC Power to internal battery charger (positive connection)
6 -	Charging Contacts (Model 2100S)	Supplies DC Power to internal battery charger (negative connection)
7	N/A	N/A
8	Gasket, Control Panel	Water repellent
9	Control Panel Service Screws	To remove panel from chassis
11	On/Off Switch	Turns unit on or off
11	Regulator Control	Adjusts negative pressure
12	Battery Condition LED	Bi-color; Red = depleted battery, Green = battery charged to available capacity
13	Protective Cap / Charging Receptacle	Water repellent
14	Roto-molded Chassis	
15	Battery Connection	Quick disconnect
16	Wiring Harness	
17	Vacuum Pump	Provides vacuum source
18	Battery Ties / Velcro Strap	Secures battery
19	Battery Holder	Holds battery in place
20	Battery	Supplies electrical power to pump
21	Tubing Strap	Holds patient tubing in place
22	Suction Tip	HI-D Large Bore Suction Tip, SSCOR Part #44241
23	Patient Connecting Tubing	9/32” ID x 6’, SSCOR Part #43200
24	Charging / Retention Shelf	Charges unit while retaining it up to a force of 25G
25	AC/DC Converter	Activates internal battery charger. SSCOR Part #80521-100
26	12V DC Electrical Plug	To connect AC/DC converter to battery
27	DC Power Cord	Delivers DC power from vehicle to suction unit

Getting Acquainted

Electrical Operation: Constant battery charging is required.

MODEL 2100 - DC BATTERY CHARGING FROM VEHICLE:

Connect the DC power cord to the cigarette lighter receptacle in the vehicle or hard wire the DC power cord to the DC electrical system of the vehicle on a properly fused line in front of the master switch. Connect the electrical line cord to the suction device by securely attaching the charging plug (26) into the receptacle (13). The vehicle electrical system furnishes power to the internal dual mode battery charger. The suction device is powered by the vehicle current. The DC power cord may be purchased at shop.sscor.com.

MODEL 2100 - DC BATTERY CHARGING FROM AC POWER USING AC-DC CONVERTER:

The 12Volt 1Amp AC Converter will not run the pump. If battery charging from AC power is required, connect the SSCOR AC-DC converter (25) to an AC outlet. The converter connects to the unit through the receptacle (13) on the front panel. Do not attempt to run the pump with the AC converter attached to the pump. Remove the AC converter connection from the pump prior to any suction procedure. The AC/DC Converter may be purchased at shop.sscor.com.

MODEL 2100S - DC CHARGING FROM THE CHARGING SHELF:

See page 9 for instructions to mount the charging/retention shelf. Hard wire the DC power cord to the DC electrical system of the vehicle on a properly fused line in front of the master switch. Connect the 12V DC electrical plug (26) to the receptacle on the side of the charging/retention shelf. Pull the handle of the shelf up and out and place the unit in the charging/retention shelf. The unit will charge via the charging contacts (6).

MODEL 2100S - DC BATTERY CHARGING FROM AC POWER USING AC-DC CONVERTER:

Note: The 12V 1Amp AC Converter will not run the suction device. If charging from AC power is required, mount the charging/retention shelf near a 115V AC power outlet. See page 9 for instructions to mount the charging/retention shelf. Connect the SSCOR AC-DC converter (25) to a 115V AC outlet. The converter delivers power to the unit through the receptacle on the side of the charging/retention shelf. Pull the handle of the shelf up and out and place the unit in the charging/retention shelf. The unit will charge via the charging contacts (6). Do not attempt to run the suction device with the AC converter attached to the device. **Remove the AC converter connection from the charging/retention shelf prior to any suction procedure.**

While connected to the charging source, the internal dual mode charger monitors the battery and charges it when needed. When disconnected from the charging source the suction device is designed to run independently for 45 minutes (± 10%) on a fully charged battery at full capacity. See page 4 of this operations manual for an explanation of battery capacity. If your suction unit is wired to the vehicle battery via an automatic load switch power supply, be sure to use a filter in order to eliminate any voltage spikes.

BATTERY CHARGING VERIFICATION

Once the unit is connected to the charging source, check the On/Off switch on the control panel (10). The amber LED indicates a good connection and that the battery is charging.

Getting Acquainted

Operation of Unit:

- Negative pressure is controlled by a two position regulator (11). When fully depressed (pushed toward the pump), the negative pressure exceeds -525mmHg. To reduce negative pressure, pull the regulator straight out to the stop. In this position, the negative pressure will be -120mmHg (±15%).
- Attach the patient connecting tube (23) to the patient port (2) on the canister (3). Use 9/32" ID tubing.
- Push the On/Off switch (10) to the “On” position.
- Occlude the end of the patient connecting tube (23) and keep it occluded for 10 seconds. Release the occlusion and observe evidence of negative pressure. If the pump is running and no negative pressure is observed, check to be sure the lid on the disposable canister is tight and vacuum connections are secure. See Trouble Shooting, Page 12 for additional help.
- Dispose of the canister after use according to local / regional / national requirements for the disposal of hazardous waste materials.
- Reconnect the S-SCORT to the charging source as soon as possible following use. The amber light on the ON/OFF switch will confirm connection to the charging source.

Note: When charging the battery, verify the amber charging indicator light on the On/Off switch is lit.
The bi-color LED on the control panel will not show GREEN until the battery is fully charged to its current capacity. A battery should fully charge in 4 to 6 hours.

Significance of Control Lights on the Front Panel

The amber charging indicator light on the On/Off switch (10) indicates the S-SCORT® “TEN” is receiving electrical input from the power source. The green light on the On/Off switch indicates the pump is running. The bi-color LED (12) lights Green when the battery is fully charged to its current capacity and Red when the battery is depleted. During the charging cycle, while the battery is being brought up to full charge, the LED indicator will not be lit but the amber light on the On/Off switch will indicate the battery is charging. Both the amber light and the green LED will be lit when the battery is fully charged to its current capacity.

On/Off Switch		
	Green Light	Pump is running
	Amber Light	Unit is receiving electrical input from charging source
Bi-color LED		
	Green is lit	Battery is charged to its full capacity.
	Red is lit	Battery is depleted – Connect unit to charging source immediately Neither is lit Battery is not depleted. Connect the unit to its charging source. If the amber light on the on/off switch is lighted, the battery is in its’ charging cycle.

CAUTION: The pump will not run when the Red LED is on, indicating the battery is depleted. When the Red light is observed, immediately turn the switch off and connect the unit to the charging source as soon as possible. Always turn the On/Off switch “Off” as soon as possible after the procedure.

Getting Acquainted

Run the following test weekly to ensure proper performance of the device

1. Confirm the unit is connected to a power source, the battery is charging, and the green LED is lit indicating the battery is fully charged.
2. Remove the unit from the power source and run the unit from its internal DC battery.
3. See Caution - Notice, page 2 number 9. Check for vacuum by occluding the patient tube and push the regulator in to the stop.
4. The vacuum reading should rise to -300mmHg from zero in 3 seconds. It should max out at ≥ -525mmHg. Un-occlude the patient tubing.
5. Allow the unit to run for 15 minutes on DC power. If the unit stops or slows during the 15 minutes, it is possible the battery capacity has been depleted. It is time to replace the battery.
6. If the unit is still running at full power after 15 minutes, adjust the regulator to the desired setting, turn the device off and put it back on charge.

SSCOR recommends replacing the battery after 3 years. Replacement battery may be purchased at shop.sscor.com.

Charging/Retention Shelf Mounting Instructions

The Model 85000 Charging/Retention shelf can be mounted by the base or vertically in order to hold the Model 2100S S-SCORT® Ten Portable Suction device. Mount the retention bracket to a suitable safe mounting surface so the indicator lights on the control panel are visible to the user. The unit is shipped ready to be mounted by the base, but if that does not fit your requirements, you can easily modify the unit to mount it vertically.

Note: the mounting bracket will hold the S-SCORT Ten in place to a force of 25G. Select and prepare a mounting surface, and take care in the mounting procedure, so the bracket and pump will be secure at a force equal to, or greater than, 25G.

Base Mount

Use the mounting template that is shipped along with the Operation Instructions and Maintenance Manual to mark the hole placement for a base mount. Use a 5/16" drill. Remove the nut and washer from the screws extending from the base plate. Slip the screws of the base plate through the holes you have drilled and reattach the washers and nuts to secure the Charging/Retention shelf in place. Coat the nuts with Loctite® (not supplied) before securing the Charging/Retention Shelf.

Vertical Mount

Remove the four hex head screws from the base plate. You will not use this mounting plate to mount the unit vertically. Use the Mounting Template that is shipped along with the Operation Instructions and Maintenance Manual to mark the hole placement for a vertical mount. Use a 5/16"drill. Put the four 1-1/2" bolts through the holes in the charging shelf arch. Reattach the washers and nuts to the screws to secure the Charging/Retention shelf in place. Coat the nuts with Loctite (not supplied) before securing the Charging/Retention Shelf.

Electrical

Hard wire the DC power cord (27) to the DC electrical system of the vehicle in front of the master switch. The ribbed wire of the split charging cable is positive. The inside of the barrel connector to the charging shelf is positive. The front charging contact, closest to the canister holder, is positive and it matches the front charging pin on the charging shelf, which is positive. Make certain the circuit is properly fused according to appropriate vehicle standards.

Warranty

SSCOR warrants that each new product is free from defects in material and workmanship under normal use and service for a period of one year from date of purchase. If returned to SSCOR, we will arrange for repairs or replacement within the terms of the warranty. The product should be decontaminated and returned properly packaged and postage prepaid. Loss or damage in transit to the factory shall be at the purchaser's risk. Please call 800-434-5211 or international +1 818-504-4054 for return authorization or for the location of an authorized repair center. Loss or damage in return shipment from SSCOR shall be at the purchaser's risk.

The warranty shall not apply to any SSCOR product which has been repaired by anyone other than an authorized SSCOR representative, or altered in any way so as, in SSCOR's judgment, to affect its safety or efficacy, nor which has been subject to misuse, negligence, or accident, nor which has had the serial number altered, effaced or removed. Neither shall this warranty apply to any SSCOR product which has been connected otherwise than in accordance with the instructions furnished by SSCOR.

This warranty is in lieu of all other warranties expressed or implied and of all other obligations or liabilities on SSCOR's part, and SSCOR neither assumes, nor authorizes any representative or other persons to assume for it, any other liability in connection with the sale of SSCOR products.

This warranty gives you specific legal rights and you may also have other rights that vary from jurisdiction to jurisdiction. For countries where minimum warranty terms are determined by statute, the warranty term is the longer of the statutory period or the term listed above.

Batteries, disposable items including collection canisters, patient tubing and catheters are excluded from this warranty.

The Rotomolded chassis of the S-SCORT Ten is unconditionally warranted for the life of the unit.

Model 2100S (with Charging Shelf) Battery Replacement Policy
SSCOR will replace any S-SCORT® Ten Model 2100S battery which fails to operate the pump to specifications for a period of three years from the date of purchase. Verify that the pump runs to specifications as per the weekly checklist on Page 9 in this Operations Manual.

Maintenance

Preventive Care: Observe the following maintenance routine to ensure readiness at any time:

1. When the SSCOR aspirator is not in use, keep batteries on continuous charge.
2. Test the SSCOR aspirator at regular intervals; See page 9.
3. Make sure the SSCOR aspirator is always clean and ready for use.
4. If the procedure produced an excessive quantity of fluids, check the vacuum line (1) for evidence of moisture. If the vacuum line between the pump and canister is moist, it is possible that fluids have reached the vacuum pump. See Disinfection Instructions (page 11).
5. If the vacuum pump appears defective, return the unit to the factory for repair. Do not attempt to repair the vacuum pump.
6. For technical assistance, call (800) 434-5211 or international +1 (818) 504-4054. For replacement parts and accessories, please visit shop.sscor.com.

Maintenance

As soon as possible after use, the single use disposable canister, patient tubing and catheter should be discarded according to local / regional / national requirements for the disposal of hazardous waste materials. Clean the exterior of the SSCOR suction unit using a mild detergent and clear water by dampening a clean lint free cloth. Rinse using clear water and another damp clean lint free cloth to remove any detergent residue.

NOTE: The hydrophobic filter in the canister helps to ensure that no moisture or particulate matter reaches the inside of the device. When fluids fill the canister, the positive (mechanical float) shutoff valve closes immediately, shutting the vacuum port off so as to prevent fluid from contacting the pump. The filter has been tested by the manufacturer (Bemis) to screen out aerosolized microorganisms and particulate matter at a bacterial efficiency rating of 99.99% DOP. The canister also has sidewall gradation marks starting at 100 ml/cc and at every 50 ml/cc up to 1200 ml/cc indicating the fill level of the canister.

In the unlikely event that fluids may have reached the vacuum pump, read the disinfection section. Your engineering department will have to open the unit to check the condition of the pump.

Do not reuse any single use disposable parts; do not submerge the device into any liquid, this will void the warranty and cause the device to malfunction.

Disinfection

Use personal protective equipment such as gloves, a smock, and face and eye protection when handling units that are suspected to be contaminated.

Part	Cleaning and Disinfecting
Collection Canister	Disposable item, re-use not permitted. Use new canister for each patient.
Patient Tubing	Disposable item, re-use not permitted. Use new patient tubing for each patient.
HI-D® Stick	Disposable item, re-use not permitted. Use new HI-D Stick for each patient.
Vacuum Pump	Wipe with damp cloth or disinfectant wipe. Sterilization not permitted. Vacuum pump should be replaced if contaminated
Chassis	Wipe with damp cloth or disinfectant wipe. Sterilization not permitted.

Caution: Disconnect the unit from any power source prior to cleaning the unit.

Disinfect the unit using a mild surface disinfectant, such as a 10:1 mixture of water and bleach. The unit is designed to suction contaminated fluids, which should be removed from the system immediately after use. In the unlikely event that fluids may have reached the vacuum pump, your engineering department will have to open the unit to check the condition of the pump. When cleaning the interior of the chassis, disconnect the battery from the wiring harness. The only foreseeable way fluids may reach the vacuum pump is the filter in the canister has been compromised or bypassed.

For technical assistance, call (800) 434-5211 or +1 (818) 504-4054. For replacement parts and accessories, please visit shop.sscor.com.

Troubleshooting

PROBLEM	POSSIBLE CAUSE	CORRECTIVE ACTION
Unit does not function when switch is in the “ON” position	• Molex connections disconnected • Battery discharged • Battery damaged • Converter damaged • Internal battery charger is damaged	• Reconnect Molex connections • Recharge battery • Replace battery • Check output of converter • Return unit to SSCOR, Inc.
Unit does not suction when pump is running	• Vacuum line loose • Canister damaged • Canister lid is not tight • Thumb vent on suction tip is not occluded	• Check connections • Replace canister • Re-secure canister lid • Occlude thumb vent with thumb
Pump is sluggish	• Residual materials have collected in the pump head • Battery is unable to retain a charge • Loose connections	• Replace pump • Replace battery • Check connections
System shuts down while suctioning heavy particulate matter	• Vacuum line clogged at canister lid • Float valve has closed • Battery damaged	• Remove connector or canister lid and loosen obstruction • Loosen float valve, empty contents, or replace canister • Replace battery
Regulator stem is difficult to pull	• Stem requires lubrication	• Lubricate stem with pneumatics lubricant

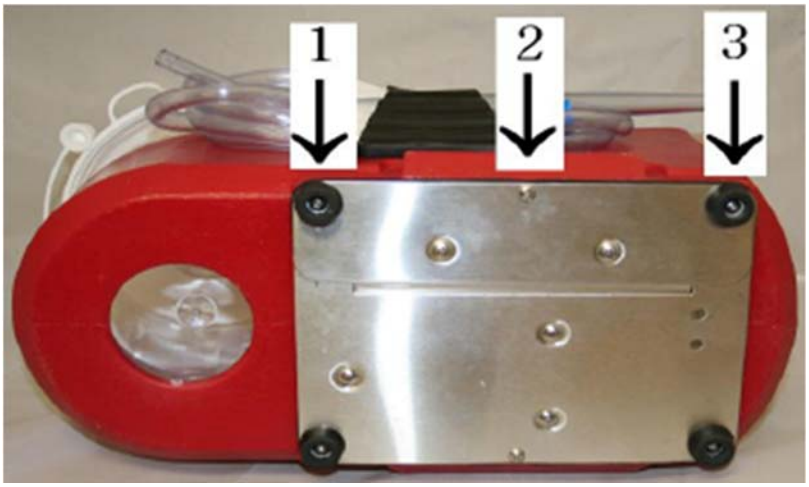
General Specifications

CHARACTERISTICS	SPECIFICATIONS
Size	14"L x 9.5"H x 7"W
Weight	10 pounds
Vacuum Pump	12V DC., 3.0 A Clinical Airflow ≥ 30LPM Exceeds 525mmHg
Regulator	Controls negative pressure
Power Source:	
Battery (DC Power)	Rechargeable Sealed Lead Acid. Please read pages 7 – 9 for battery care suggestions. At full capacity a fully charged battery will power the suction device for 45 minutes (± 10%).
DC Charging from Vehicle	Vehicle electrical system powers the pump and charges the battery until disconnected and then the unit switches automatically to its self contained battery.
Internal "Dual Mode" Charger	Monitors battery voltage and charges battery when needed.
Switch	On/Off Rocker, water resistant. Lights on the switch signal electrical input and output.
Collection Canister	1200cc/ml SSCOR part #48041
Patient tubing	Vinyl tubing 9/32"ID x 72"L SSCOR part #43200
Suction Tip	HI-D® "Big Stick®" Large Bore Suction Tip with thumb control. SSCOR part #44241

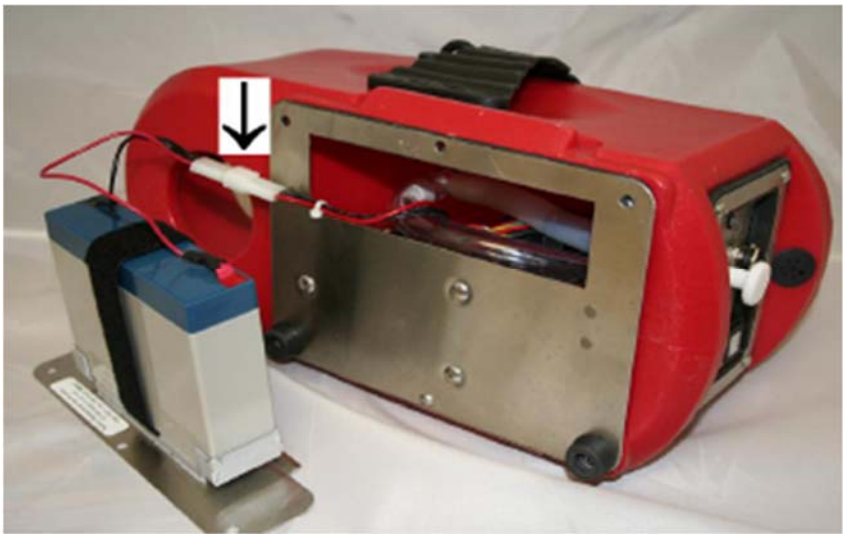
Replacing the Battery (Available for purchase on shop.sscor.com)

Refer to Parts Diagram pages 5 & 6 and Electrical Diagram on page 16.

1. Remove the three screws noted below from the bottom plate. Do not remove any other screws.

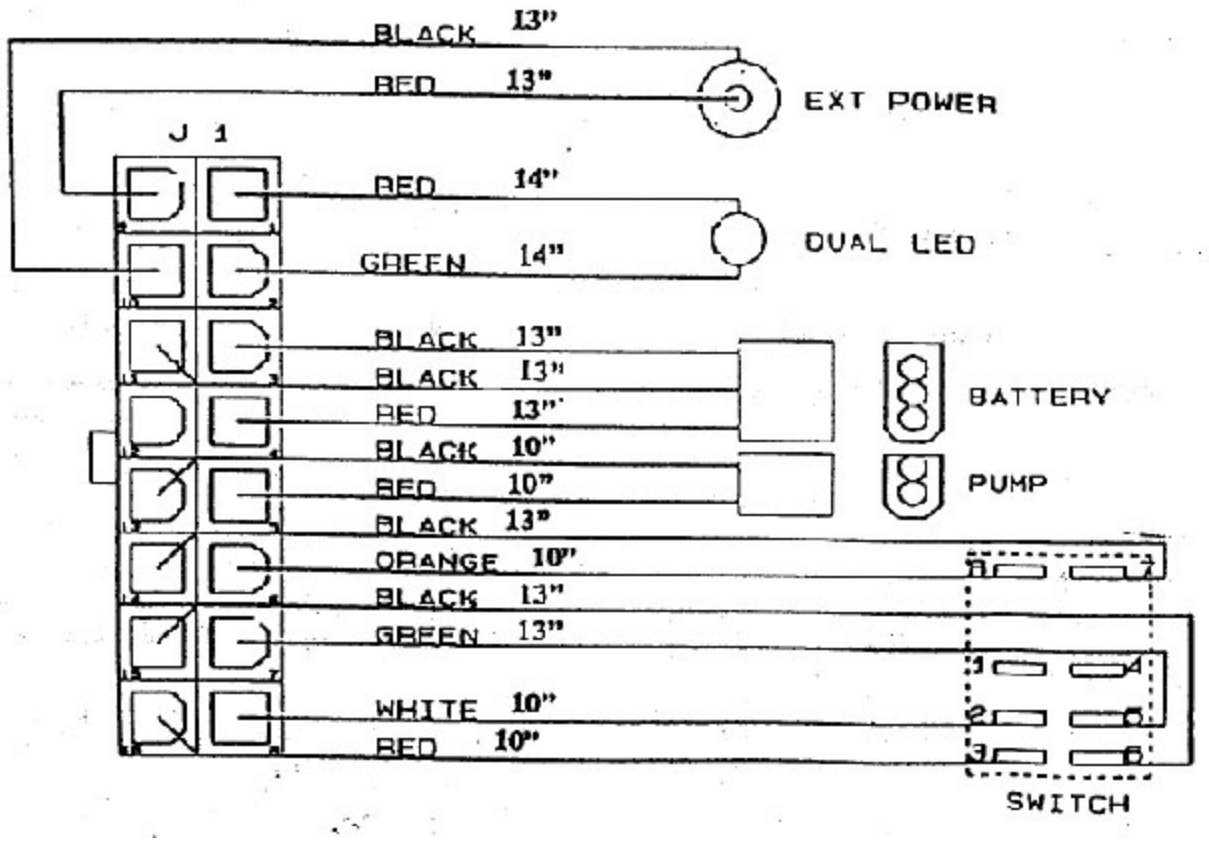


2. Pull the battery plate away from the device and disconnect the battery Molex. Release the battery from the battery holder by removing the velcro strap. Install the new battery in the battery holder, reconnect the Molex connection, and secure the battery using the velcro strap. Turn the device on and verify negative pressure from the vacuum tubing. Re-attach the battery plate to the base plate.



Dispose of the old battery according to local / regional / national requirements for the disposal of sealed lead acid batteries.

Electrical Diagram



Mounting Template

Charging / Retention Shelf (#85000) for the S-SCORT Ten Model 2100S

To mount the Charging / Retention Shelf (#85000) for the S-SCORT Ten Model 2100S to the vehicle, drill four 1/4” holes to the appropriate hole pattern as shown below for a base mount or a vertical mount.

Please Note: Template size may vary on different printers. Make sure your holes are marked per the dimensions on the template. All dimensions are in inches.